

Application No. 09/253,573
Amendment Dated November 7, 2003
Reply to Office Action of May 9, 2003

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claim 1. (Currently Amended) A method for producing and delivering protein in vivo comprising the steps of:

(a) inserting into a vector a globin promoter which is active only in progenitor cells of red blood cells, and a gene encoding a protein which is non-native to red blood cells, wherein said promoter and said gene are operably linked;

(b) collecting an amount of progenitor cells of red blood cells from a mammal;

(c) transfecting said progenitor cells of red blood cells in vitro with said vector containing said promoter and said gene;

(d) introducing the transfected progenitor cells of red blood cells back to said mammal, wherein the transfected progenitor cells of red blood cells produce altered red blood cells containing said protein which is non-native to red blood cells in vivo in said mammal, and wherein said protein which is non-native to red blood cells is contained only in said altered red blood cells, and thereafter said protein which is non-native to red blood cells is released into a bloodstream of said mammal through rupture of said altered red blood cells.

Claim 2. (Original) The method of Claim 1 further comprising inserting an enhancer in said vector.

Claims 3 - 5 (Cancelled)

Application No. 09/253,573
Amendment Dated November 7, 2003
Reply to Office Action of May 9, 2003

Claim 6. (Original) The method of Claim 1 wherein said vector is a viral vector.

Claim 7. (Original) The method of Claim 6 wherein said viral vector is selected from the group consisting of a retroviral vector, an adenoviral vector and a lentiviral vector.

Claim 8. (Previously Presented) The method of Claim 1 wherein said progenitor cells of red blood cells are stem cells.

Claims 9 – 10 (Cancelled)

Claim 11. (Original) The method of Claim 1 wherein said protein is a member selected from the group consisting of an antibody, enzyme, cofactor, interferon, and hormone.

Claim 12. (Original) The method of Claim 1 wherein said protein is a peptide.

Claims 13 (Cancelled)

Claim 14. (Previously Presented) The method of either one of Claims 11 or 12 wherein said protein which is non-native to red blood cells is a fusion protein.

Claims 15 – 29 (Cancelled)

Claim 30. (Withdrawn) A protein produced and delivered in vivo by a process, wherein the process comprising the steps of:

(a) inserting a hemoglobin promoter and a gene encoding a non-hemoglobin protein in a vector;

Application No. 09/253,573
Amendment Dated November 7, 2003
Reply to Office Action of May 9, 2003

- (b) collecting an amount of host cells from a mammal;
- (c) treating host cells in vitro with said vector;
- (d) introducing the treated host cells back to said mammal, wherein the treated host cells produce red blood cells and said protein in vivo in said mammal, and wherein said protein is contained only in said red blood cells, and thereafter said protein is released into blood stream of said mammal through rupture of said red blood cells.

Claim 31. (Withdrawn) The method of Claim 30 further comprising inserting an enhancer in said vector.

Claim 32. (Withdrawn) The method of Claim 30 wherein said hemoglobin promoter is a natural promoter.

Claim 33. (Withdrawn) The method of Claim 30 wherein said hemoglobin promoter is a mutated promoter.

Claim 34. (Withdrawn) The method of Claim 30 wherein said vector is a viral vector.

Claim 35. (Withdrawn) The method of Claim 34 wherein said viral vector is selected from the group consisting of a retroviral vector, an adenoviral vector, and a lentiviral vector.

Claim 36. (Withdrawn) The method of Claim 30 wherein said host cells are stem cells, and progenitor cells of said red blood cells.

Claim 37. (Withdrawn) The method of Claim 30 wherein the rupture of said red blood cells is an in vivo process.

Application No. 09/253,573
Amendment Dated November 7, 2003
Reply to Office Action of May 9, 2003

Claim 38. (Withdrawn) The method of Claim 37 wherein the rupture of said red blood cells is an induced process in vivo.

Claim 39. (Withdrawn) The method of Claim 30 wherein said protein is a member selected from the group consisting of an antibody, enzyme, cofactor, interferon, and hormone.

Claim 40. (Withdrawn) The method of Claim 30 wherein said protein is a peptide.

Claim 41. (Withdrawn) The method of any one of Claim 39-40 wherein said protein is a naturally occurred protein.

Claim 42. (Withdrawn) The method of any one of Claim 39-40 wherein said protein is a fusion protein.

Claim 43. (Withdrawn) The method of any one of Claim 39-40 wherein said protein is a mutated protein.